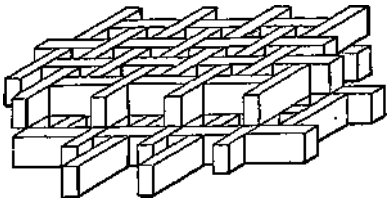
bers for gas and air. When properly laid to secure stability, the 9-in straight makes a checker with the maximum heat storage utilization of the volume occupied.



All of the computations are based upon an assumed rate of fuel consumption, and will vary as that rate changes. Other variations will be introduced by the use of different fuels and different working conditions, than those which were fixed initially as a basis for the computations. However, there is no basic reason why the design of a furnace cannot be reduced to rational methods. When the method of operation and the design are fixed, it is possible to predict the fuel consumption within a reasonable margin, as well as the performance of the furnace as a heat-transfer apparatus. The main difficulty in obtaining accurate results with these computations—results which will check with practice—lies not in the computations, but in the

FIG. 166. — Method of Laying Up Checker Brick to Form Vertical Passes.

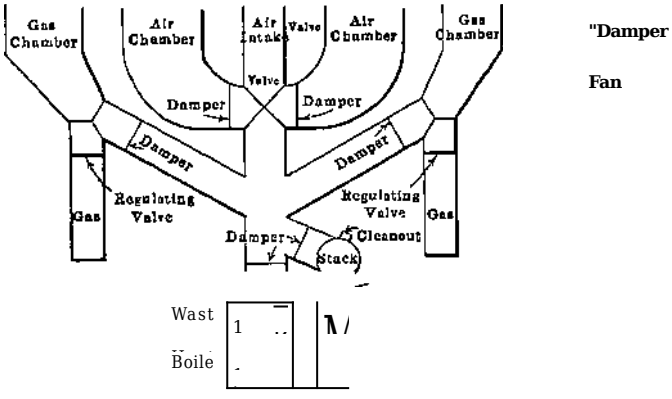


FIG. 167.—Schematic Arrangement of Flues and Dampers with Waste-heat Boiler.

initial assumptions, for unless the

foundation is. true the entire superstructure will be wrong. For instance, in computing the heat losses from the exterior walls of the furnace and chambers,